CLAIMS

I claim:

1. A method of propulsion and attitude control applicable to all fluid environments in which longitudinal propulsion is created by longitudinally adjacent, counter-rotating, drive-fans mounted on approximately vertical axes within airfoil wing assemblies which draw fluid from the ambient environment through controllable louvered vanes and vents, fixed structures of variable permeability, and door-like sub-wing assemblies located on the exterior of the wing assemblies as well as from vents arranged around the periphery of the cylindrical shrouds surrounding each drive-fan, fluid is then controllably exhausted by shroud venting means through exhaust vents at the aft and outer wingtips of the wing assemblies by the centrifugal thrust of the drive-fans, longitudinal propulsion as described is augmented by the swirl effect of the drive-fans on the surrounding ambient fluid medium as fixed permeable or controllable louvered vane intakes and exhausts that are located directly above and below the drive-fans are arranged such that the drive-fans are exposed to the ambient fluid medium at the aft-ward rotation of the drive-fans;

   V/STOL lift propulsion is likewise derived from the controlled influx of fluid through the means mentioned above that is then controllably exhausted downward approximately perpendicular to the longitudinal line of the vehicle through venting means located on the bottom of the wing assemblies, lift propulsion as described is augmented by the heat derived from primary drive components, which is drawn into the drive-fans and exhausted vertically downward to create increased lift, by giving the drive-fan blades a negative pitch, the above-mentioned lift functions are reversed and controllable, submersible descent may be achieved; and

   by regulating the fluid flow to and from the respective drive-fans, between drive-fans of the same wing assembly and between the respective wing assemblies by venting means mentioned above to control longitudinal and lift propulsion in conjunction with actuating the dihedral of the wing assemblies, trailing edge control surfaces, and the vectoring of longitudinal thrust from the aft and wing-tip exhaust vents, coordinated control of lift, pitch, roll, yaw, and lateral and longitudinal thrust is achieved.

2. A vehicle that integrates at least one left and one right wing assembly with a centrally located fuselage to create a fluid dynamic body, the structural geometry of said vehicle utilizing the invention is substantially triangulated longitudinally and laterally, with the wing assemblies being constructed around cylindrical drive-fan shrouds, which are in turn arranged within a hexagonal-cell framework, the intersection of lines bisecting these hexagonal-cell structures serve as centers for the mounting of the drive-fans and drive components, wherever possible, lateral and longitudinal triangulation is used for strength and conservation of weight, while the geometry of the invention also allows for variable mounting points for vertical, structural triangulation where necessary, each respective wing assembly is of an airfoil profile that may be modified in camber, thickness and lateral curvature to suit specific performance and role requirements;

each wing assembly houses at least two longitudinally adjacent, counter-rotating, drive-fans mounted on fixed, approximately vertical axes within their own respective cylindrical shrouds, and are capable of being powered by different means, including: rotary combustion engines, electric, hydraulic, and/or steam motors, each shroud has operable venting means arranged around the periphery that regulate the direction and volume of centrifugal fluid flow to and from each respective drive-fan, each wing assembly has controllable exterior venting located directly above and below the drive-fans and/or fixed permeable, semi-permeable and non-permeable surfaces that regulate fluid flow over and under each respective wing assembly to create a dynamic laminar envelope around the vehicle as well as regulating the direction and volume of fluid flow to and from the drive-fans to create coordinated lift, pitch, roll and yaw movements as well as longitudinal and lateral thrust and braking, each wing assembly has at least one leading edge vent that may be controlled to regulate fluid flow into the forward drive-fan shroud, each wing assembly has venting means located adjacent to the fuselage to allow heat to be drawn from primary drive components in the case of utilizing electric, hydraulic, and/or steam motors on the drive-fans and to allow for fluid flow from venting structures and/or fixed permeable or semi-permeable structures located on the leading edge and top of the fuselage, each wing assembly has at least one controllable vent located on the outside edge of the wing assembly that regulates fluid flow from the adjacent drive-fan shroud to control lift, pitch, roll and yaw as well as longitudinal and lateral thrust, each wing assembly has at least one controllable aft vent that regulates fluid flow from the aft drive-

fan shroud to control lift, pitch, roll and yaw as well as longitudinal and lateral thrust, each wing assembly has at least one trailing edge split-type flap and/or aileron mounted on the top and/or bottom of the wing assembly to control pitch, roll and yaw movements, each wing assembly has at least one top and/or bottom aft tail surface to control the vectoring of fluid exhaust from the aft exhaust vent as well as effecting pitch, roll and yaw movements, each wing assembly may be hinged to pivot up and/or down, thereby effecting the dihedral of the entire wing assembly, to control yaw, roll and pitch movements, lateral center of gravity and fluid flow to and from each respective drive-fan shroud and between left and right wing assemblies; and

the fuselage houses a central, forward cabin/cockpit, with primary drive components, in the case of utilizing electric, hydraulic and/or steam drive motors on the drive-fans, being located between the cabin/cockpit and wing assemblies, the area directly aft of the useable cockpit/cabin area may serve as a fluid passageway between wing assemblies which may be used to control fluid flow between left and right wing assemblies to coordinate lift, pitch, roll, yaw, lateral thrust and fluid pressure variances which occur between left and right wing assemblies during different movements, the surfaces located directly above said area may be of a permeable or semi-permeable construction, fuselage top surfaces adjacent to the wing assemblies may be of permeable or semi-permeable construction as fluid is also inducted into the wing assembly drive-fans from the fuselage through venting means located between the fuselage and the wing assemblies, located at the extreme aft of the fuselage may be a vertical tale and rudder assembly to control turning movements that may also consist of a horizontal elevator or split elevators mounted to the top of the tail assembly to effect lift, pitch, roll and yaw.

3. A vehicle as recited in claim 2 wherein said vehicle can be constructed using varied techniques common knowledge to marine and aircraft construction including: marine/aircraft grade plywood, fabric over metallic tube frame, monocoque skin and frame, composite core and/or a combination of the above-mentioned.

4. A vehicle as recited in claim 2 wherein said vehicle can be built to any size from remote-controlled scale model or toy to mass transport or cargo.

5. A vehicle as recited in claim 2 wherein drive-fan cell modules of a hexagonal shape and their relevant aerodynamic and structural elements may be added, longitudinally and laterally, to increase the performance of said vehicle.

6. A vehicle as recited in claim 2 wherein the fuselage, as viewed from above, may be modified by selective inward or outward pivoting of the fuselage halves in regard to each other and adding structures or modifying existing structural elements or by splitting the fuselage and adding a uniform spacing between fuselage halves to create smaller or larger frontal areas and respective cockpit/cabin area while also making it possible to add auxiliary longitudinal propulsion means.

7. A vehicle as recited in claim 2 wherein the primary drive unit in a electrical, hydraulic or steam variant of said vehicle is of a modular design with primary movers and generators or pumps added as drive-fan cells are added.

8. A vehicle as recited in claim 2 wherein the closed, non-actuated, dihedral of each wing assembly may be of a negative, positive or neutral dihedral and has means to be controllably pivoted from a negative dihedral to a positive dihedral, neutral dihedral to a positive dihedral, neutral dihedral to negative dihedral and/or negative dihedral to a positive dihedral.

9. A vehicle as recited in claim 2 wherein the primary drive means to power primary drive electric generator(s), hydraulic drive pump(s) or steam generators/pumps can be of various types including: internal combustion rotary or piston, turbo shaft, or nuclear steam reactor.

10. A vehicle as recited in claim 2 wherein the drive-fans utilized may be of different types including: fixed axial, variable pitch axial, fixed pitch centrifugal, variable pitch centrifugal and/or a combination of the above-mentioned.

11. A vehicle as recited in claim 2 wherein the drive-fans utilized may be of different relative sizes, blade number or blade profile to create a balanced lifting platform in regard to longitudinal center of gravity and longitudinal propulsion characteristics.

12. A vehicle as recited in claim 2 wherein a computer of modular design for sensor inputs and control outputs senses the attitude, altitude and velocity of the vehicle, pilot/operator control inputs, speed and output of primary drive components and drive-fans, and the position of drive-fan pitch actuators, wing assembly dihedral actuators, and control surface actuators and then processes said inputs, while making minute corrections, into outputs to control the above-mentioned drive and control surface components and structures, to create stable and controlled motion of the vehicle.

13. A vehicle as recited in claim 2 wherein a vertical stabilizer, t-tail or v-tail is affixed to the aft of the fuselage.